

Bench-Scale Trace Contaminant Testing of SA9T at Ambient and Reduced Pressure Conditions

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A principal concern for air revitalization technology in a closed loop system is the capability to control carbon dioxide (CO₂) and humidity (H₂O). An amine based sorbent technology, SA9T, has been evaluated for use in this application and several programs are evaluating it for use in both cabin and space suit applications. While the CO₂ and H₂O performance of the sorbent has been tested extensively, the question of how trace contaminants impact performance requires further evaluation.

This paper presents experimental results of bench-scale SA9T testing that was performed under a variety of test conditions and with several different trace contaminants. Tests were conducted to determine if the capacity of the SA9T media to sufficiently remove CO₂ and H₂O is compromised after exposure to a fully saturated trace contaminant at ambient conditions. Tests also were conducted to evaluate the performance of SA9T at ambient conditions in a continuous 30-day test with a mixed trace contaminant stream. In addition, testing also evaluated the impact of CO₂ and H₂O removal performance at suit loop pressures (29.6 KPa/4.3 psia) during cyclic operation with a constant inlet contaminant load.